WHAT IS CLAIMED IS:

1. An electromagnet composed of a coil, a movable iron core adapted to move on the center axis of the coil, and a stationary iron core provided so as to cover the upper and lower surfaces and the outer peripheral surface of the coil, characterized by a permanent magnet arranged in a gap surrounded by the movable iron core and the stationary core, wherein the movable iron core is attracted by the stationary iron core by a magnetic field created by the permanent magnet.

2. An electromagnet composed of a coil, a movable iron core adapted to move on the center axis of the coil, and a stationary iron core provided so as to cover the upper and lower surfaces and the outer peripheral surface of the coil, characterized in that a nonmagnetic protrusion is provided to the stationary iron core on a side where the movable iron core is inserted, the movable iron core is composed of a plunger and a steel plate fixed to one end part of the plunger, an end face of the plunger and the stationary iron core, and the steel plate and the protrusion are opposed in the same direction, and a permanent magnet is arranged in a zone surrounded by the plunger, the protrusion, the steel plate and the stationary iron core.

3. An electromagnet as set forth in claim 2, characterized in that a distance between the end face

of the plunger and the stationary iron core is set to be shorter than a distance between the steel plate and the protrusion.

4. An electromagnet composed of a coil, a movable iron core adapted to move on the center axis of the coil, a stationary iron core provided at opposite end surfaces and the outer peripheral surface of the coil, a power source for applying current to the coil in forward and reverse directions, wherein the movable iron core is moved toward the stationary core when the current is applied to the coil in the forward direction, characterized in that:

said stationary iron core includes a stationary iron core upper member configured to cover one of the axially opposite ends of the coil,

a permanent magnet is arranged on the upper surface of the stationary iron core upper member, and

the movable iron core is composed of a planar plate member having a surface which is opposed to the upper surface of the stationary core upper member with the permanent magnet intervening therebetween, and a plunger having a cylindrical surface opposed to the inner peripheral surface of the coil.

5. An electromagnet as set forth any one of claims 1 to 4, characterized by an current circuit for selectively applying a forward current and reverse current to the coil, and in that when the forward current is applied, a magnetic filed in the same

direction as that of a magnetic field produced by the permanent magnet is produced so as to effect attraction, but when the reverse current is applied, the magnetic field produced by the permanent magnet is cancelled out so as to effect release operation.

6. An electromagnet as set forth in claim 4, characterized in that the gap g1 between the inner peripheral surface of the stationary ion core upper member and the plunger member is smaller than the axial thickness t of the permanent magnet.

7. An electromagnet as set forth in claim 4, characterized in that a magnetic member is interposed between the end surface of the plunger member on the planar plate member side, and the planar plate member.

8. An electromagnet as set forth in any one of claims 1 to 7, wherein said permanent magnet is selected from a group consisting of a rear earth samarium-cobalt group magnet, a neodymium group magnet, an alnico group magnet and a ferrite group magnet.

9. An actuating mechanism for a switching device, characterized by an electromagnet as set forth in any one claims 1 to 5, contacts which can make contact with and separate from each other, a turn-off spring for opening the contacts, and a power source circuit for selectively applying forward current and reverse current to the coil in the electromagnet, and characterized in that when the forward current is applied, the contacts are turned on while the spring is

urged so as to maintain a turn-on condition by means of an attracting force of the permanent magnet while when the reverse current is applied, a magnetic flux produced by the permanent magnet is cancelled out so as to effect a turn-off operation by a force of the turn-off spring.

10. An actuating mechanism for a switching device, as set forth in claim 9, characterized in that a plurality of said electromagnets having one and the same kind are used in combination.